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ABSTRACT

Out-of-doors instruction and the use of outdoor classrooms to allow children to learn directly from the natural environment, as well as about it, are encompassed in this pamphlet. It is intended as a source of ideas for developing and using outdoor classrooms on school sites of any size wherever they are located. Included is an explanation of how to start development of an outdoor classroom, how to prepare a plan for the most comprehensive use of the school site, and where to get professional help in applying conservation practices that will improve learning opportunities. In addition, numerous pictures and brief descriptions suggest ideas for actual studies in the outdoor classrooms. (BL)

ED 065309

OUTDOOR CLASSROOMS

on school sites

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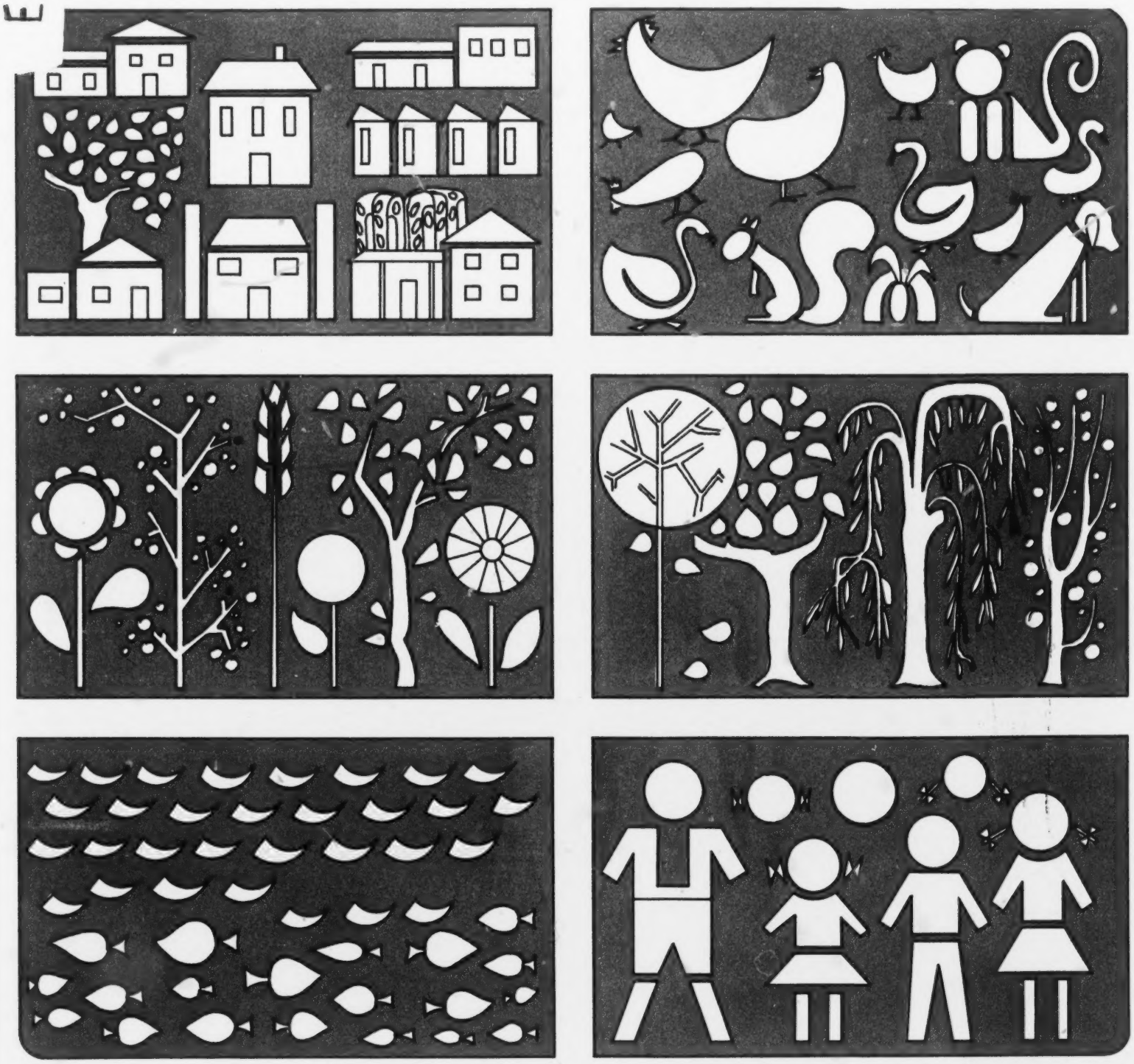

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NJ-40,502

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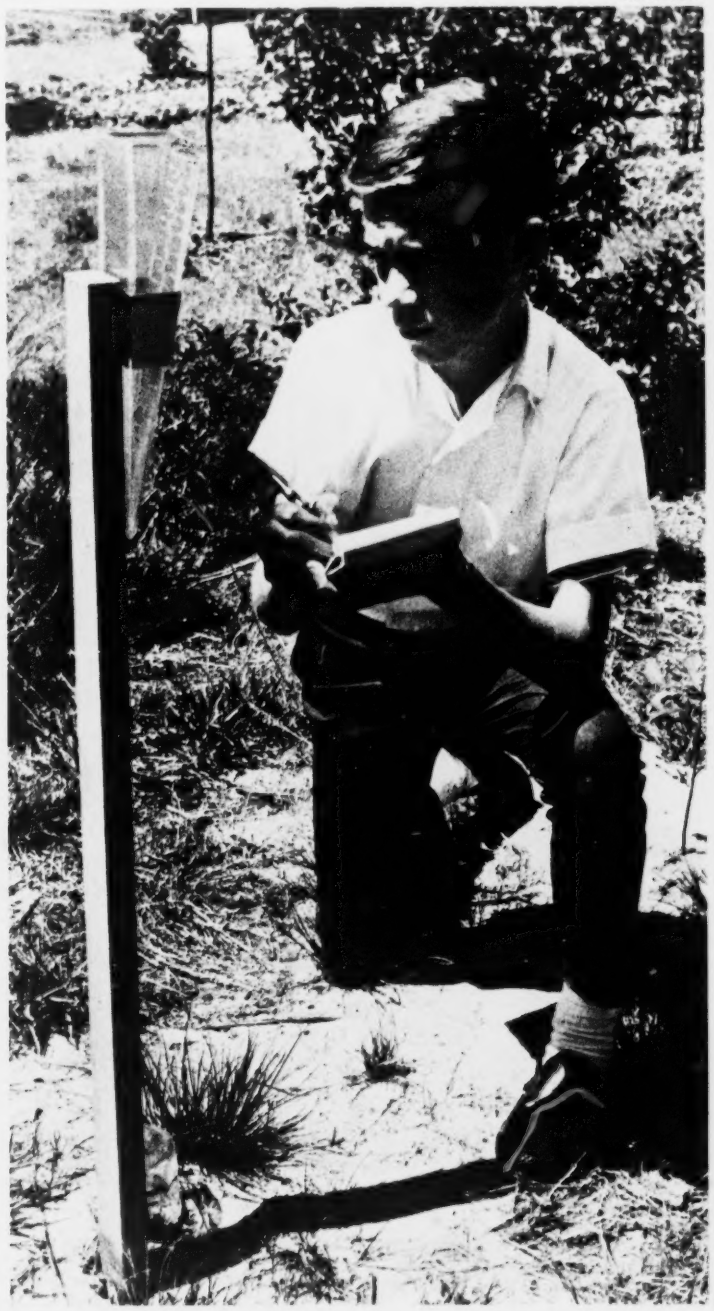
OUTDOOR CLASSROOMS ON SCHOOL SITES

An outdoor classroom supplements and stimulates the environmental conservation education program in a school. As a place for creative learning experiences, it gives depth, meaning, and new dimensions to generalizations about and understandings of man's relation to his environment.

NJ-40,507



MASS-260

MASS-245

3

Today, school programs often provide the only opportunity for many young citizens to learn how they depend on natural resources and how man's use and care of soil, water, and air affect our environment. Much can be learned from textbooks, lectures, and discussions. But in an outdoor classroom, children can learn directly *from* the natural environment as well as *about* it.

BN-37,937

As an integral part of the school site, an outdoor classroom expands the learning environment readily accessible to children and teachers. Its use requires no special permit, no time-consuming arrangements for transportation, lunches, and comfort facilities, and no shifting of class schedules. More important, it is immediately available for continuous studies, for the unexpected observation, for supervised individual study projects, and for capitalizing on the "teachable moment."

Here, through working with natural resources, students learn how their decisions and behavior affect other living things and how people are affected by the way they use soil, water, air, and other living creatures.

By observing, classifying, measuring, analyzing, and interpreting phenomena, children gain not only essential learning skills but also an idea of their own relation to the natural world. As they acquire knowledge and understanding from and about the environment, they also develop some competence in evaluating alternatives for using and managing resources.

Attitudes guide our behavior, and they are shaped early in life. In outdoor classrooms, children can have the many sensory and other learning experiences with soil, water, plants, and animals

MICH-61,117

needed to develop a personal value system that gives priority to behavior consistent with rational and prudent use of these resources.

In integrating conservation instruction into the K-12 curriculum, an outdoor classroom can serve as a laboratory for all studies in the curriculum: physical and social sciences, arts and humanities, vocational education, and others.

An outdoor classroom serves to *reinforce* essential environmental generalizations such as:

- All living things, including people, are interdependent—with one another and with their environment.
- Natural resources undergo continuous change; nothing in the living world remains static.
- Man depends primarily on renewable natural resources for survival; his use and care of them in accord with ecological principles determine his own fate.
- Natural resources and ecological systems have specific capabilities and limitations; the rate of natural resource use depends largely on the economy, the population, and the degree of industrial development of a nation.
- Environmental quality is defined and determined by people within the context of cultural, social, economic, and political values.

The decision to develop an outdoor classroom usually comes long after school buildings and facilities are in place on a site. But the unused parts of a site, perhaps those too hilly, too wet, or otherwise considered undesirable, may be ideal for an outdoor classroom. Generally, a conservation plan for the entire school site is needed.

Each outdoor classroom is an individual project. It must be planned according to the size and shape of the area available and to the topography, climate, geologic features, geographic location, and special resource problems of that site. A teacher in a center-city school found a few square feet of soil beyond the black top under a fire escape and made this a miniature study area. In another place, 40 acres of the school site were used for an outdoor classroom. Although the natural resources of an outdoor classroom in New Mexico are far different from those of one in New York, students can acquire the same basic understandings of soil-water-plant relationships and the need for intelligent management of all natural resources.

This booklet is intended as a source of ideas for developing and using outdoor classrooms on school sites of any size wherever they are located. It explains how to get started, how to prepare a plan for the most comprehensive use of the school site, and where to get professional help in applying conservation practices that will improve learning opportunities.

OH-60,946

Observing bark layers for texture, thickness, and color is part of a study that shows how the outer layer helps protect trees against injuries caused by animals, people, and insects.

MICH-61,108

Bark beetles have written their life histories on the inner bark of this log. As children study such evidences of insect damage, they can also discuss timber management practices and the economic value of wood products.

Ideas for studies in outdoor classrooms

MASS-257

Communication becomes a part of ecological studies when third graders explain to first graders how shelf-bracket fungus grows on a tree branch and what this may mean in the life cycle of the tree.

ALA-D6-1

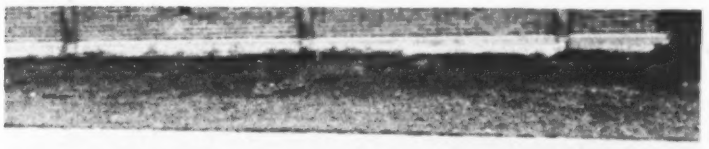
Soil profiles exposed on ditchbanks or in excavations for roads or buildings show the various soil horizons or layers—their color and texture and the influence of parent material. A resource specialist explains how soils are classified and how certain characteristics determine how soils can best be used.

MASS-259

Testing soil to determine pH and nutrient values helps students relate conservation practices in soil-water-plant management to the productive soil. In an outdoor classroom students can study various management practices and keep their own records of changes.

LA-62,674

Severe erosion in a roadside ditch beside the school yard furnishes a practical, problem-solving conservation project for these students. A resource specialist is discussing with them some of the conservation practices needed to help stabilize the ditchbanks and reduce soil washing.



PA-40,973

Measuring the degree of slope on the school yard shows how relief influences surface water runoff—both in volume and acceleration. On this site, differences in runoff from grassed slopes and from paved streets can be measured and compared readily.

8

PA-40,972

Water pollution studies can be carried on as a continuing project since students are able to return to the school pond daily to make comparison readings.

VT-849

Algae collected from the school pond can be used for studies of green plants in the food pyramid and their response to increased amounts of nutrients such as phosphorus.

CONN-10,310

Students learn the importance of good watershed management. Surface water runoff studies in an outdoor classroom show how unprotected soil washes away in rainstorms to add to sediment pollution of small streams and rivers.

PA-41,049

Autumn-olive attracts many kinds of wildlife to the school yard where students can make observations of habitat needs and can develop management practices to improve food sources, shelter, and living space for birds and other small animals as a conservation project.

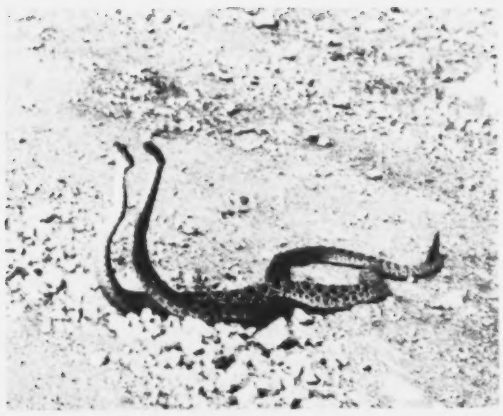
MASS-220

Rabbits are often the first wild creatures to adopt an outdoor classroom as their home. Students can record the family life of a rabbit during a school year and learn much about diversity, adaptation, and the place of certain species in the food pyramid that begins with soil, water and plants.

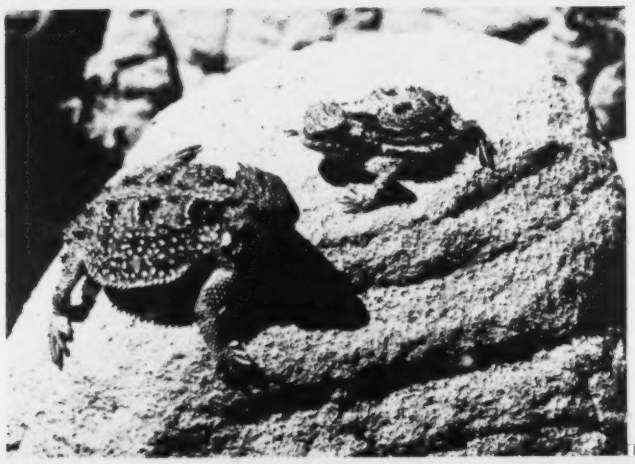
NJ-40,475

Outdoor classrooms should be planned to leave shelter areas where ground-nesting birds and small mammals feel secure. A fallen black birch limb protects this grouse nest.

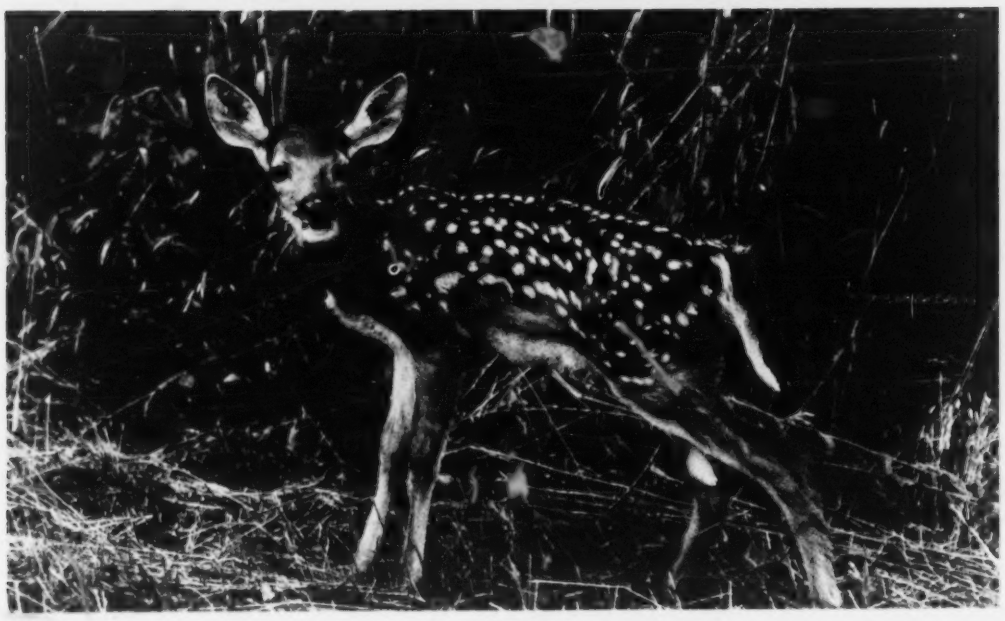
NMEX-13,845



TEX-49,836



NEB-2,184



PA-40,923

Western and southwestern schools have an opportunity to study animal and plant adaptations where lack of water is a limiting factor. Rattlesnakes help control rodent populations, as do coyotes which range far beyond the desert and figure prominently in stories and legends of the West. The small lizard commonly known as a horned toad lives in rocky, sandy country where its color blends well with its habitat. Deer are common in many parts of the country and occasionally become a nuisance. In desert areas it is easy to see how man's use of soil and water changes the environment and why understanding water management is particularly important.

Developing an Outdoor Classroom

Although the original idea and impetus for an outdoor classroom may come from almost any source—teachers, students, a conservation education consultant, a resource specialist, parents, or groups such as garden clubs—approval and support of the school board and other administrators are needed before a start can be made.

One person or a group of volunteers can present the proposal for an outdoor classroom to school administrators. Educational objectives need to be clearly stated, and student benefits from outdoor classroom learning projects should be emphasized. A tentative estimate of costs, in terms of immediate outlay and probable future needs, should be included in the proposal.

The services of a resource specialist are important in preparing the opening presentation. By making a preliminary appraisal of the school site, he can identify any conservation problem areas that need immediate attention and also those areas that can be developed through student projects.

When administrative support is insured and educational objectives have been arrived at through consultation with teachers of all subjects, the principal or other administrator should name a small committee to take leadership in developing the outdoor classroom.

This committee should include not only teachers and administrators but also a resource specialist, students, parents, school maintenance staff, and, in some instances, representatives from community groups and organizations. The chairman can be appointed by the school administrators or elected from within the group.

Throughout the planning and early developmental phases of the outdoor classroom, there will be many opportunities for student learning activities. Members of the committee should outline these special learning projects and assign responsibility for their completion. Among the projects that can be planned by and for students are:

- Mapping, surveying, and measuring slopes; inventorying natural resources.
- Audiovisual projects to record the history of the outdoor classroom with slides, photos, motion pictures, and tape recordings.
- Journalism and language arts projects—articles for school papers, features for the local newspapers, programs for local radio and television stations, talks and reports for community groups, and a historical narrative of the development.
- Industrial arts projects—designing and building learning-trail markers, signs, benches, and other items.

To proceed with the many details of setting up an outdoor classroom, the committee should have the power to delegate responsibilities to individuals or to subcommittees chosen either from the full committee or from other people in the school or community.

One member of the full committee should be authorized to speak for the entire group at school board meetings, to arrange for working with resource specialists and local, state, or federal resource agencies, and to obtain specific plant materials, hand tools, or other equipment when needed.

Subcommittee assignments might include:

- Collecting, evaluating, and summarizing published materials from many sources to furnish ideas and suggestions for the outdoor classroom and for learning projects related to conservation education.
- Organizing and scheduling specific projects and activities for students, teachers, parents, and community cooperators.
- Enlisting the help of community and civic organizations, resource agencies, and others through a continuing information program that includes talks, slide shows, exhibits, and news coverage.
- Listing and determining possible sources of materials needed, such as shovels, hoes, rakes, specific plant materials, thermometers, hygrometers, compasses, hand lenses, wind gages, magnifying glasses, collecting bottles, and water- and soil-testing materials.

With the assistance of the resource specialist, members of the committee should make an inventory of the school site as the first step. This inventory will not only identify existing structures but also indicate natural features and resource areas significant to the conservation education objectives of all grades.

The inventory items will vary with the geographic location and the size of the school site. Among the things not to be overlooked are:

- Vegetation—grasses, shrubs, trees, weeds, wildflowers, plants harmful to people such as poison ivy and nettles, and vegetation in old fields for studies of plant succession.
- Topographic and geologic features—rock outcrops, boulders, slopes, streams, ponds and wet areas.
- Animal habitats—den and nesting trees, brush piles, food plants, old stumps, and fallen logs.
- Soil profiles exposed on banks and slopes; potential soil erosion and soil study areas.
- Historical remnants such as stone fences and old orchards.
- Sites that would be appropriate for learning trails with study areas and listening posts, for ponds and marshes, and for weather stations and other project areas.

Technical information and services that can be provided by a resource specialist include:

- Topographic and soil maps showing degree and direction of slopes, drainage patterns, surface water runoff patterns, and soil capabilities and limitations.
- Preparation of a written plan for the outdoor classroom including suggestions for appropriate treatment and conservation practices and recommendations for alternative solutions to conservation problems; plant materials for specific purposes such as wildlife habitat, soil stabilization, windbreaks, and beauty; a tentative timetable for specific projects such as planting, pond development, trail preparation, and the like.
- Assistance in laying out work plans and arriving at cost estimates for kinds and amounts of plant materials, grass seed mixtures, fertilizers, mulches, and the like; information on kinds of heavy equipment that may be needed for special projects such as tile lines for drainage, shaping and seeding of diversions, woodland management, and pond and trail construction.
- Suggestions for sources of additional help from other resource agencies, conservation organizations, or groups such as soil and water conservation districts.
- Information, booklets, pamphlets, and other material on soil and water conservation practices and related resource management.

Where to get information on conservation activities

The Soil Conservation Service, Extension Service, and Forest Service of the U.S. Department of Agriculture are among the federal agencies that can assist in developing outdoor classrooms. These agencies have either regional, state, or local offices. Telephone directories list these offices under "United States Government."

Many national and state conservation organizations, industrial associations, and citizen groups have local chapters or units that will help with conservation projects. The *Conservation Directory* (152 pp., $1.50), revised and published annually by the National Wildlife Federation, lists many of these organizations.

American Forest Institute
1835 K Street, NW
Washington, D.C. 20036

American Forestry Association
919 17th St., NW
Washington, D.C. 20006

Conservation Education Association
Post Office Box 450
Madison, Wis. 53701

Conservation Foundation
1250 Connecticut Avenue, NW
Washington, D.C. 20036

Izaak Walton League of America
1326 Waukegan Road
Glenview, Ill. 60025

National Association of Conservation Districts
Davis Memorial Conservation Library
Post Office Box 776
League City, Tex. 77573

National Audubon Society
1130 Fifth Avenue
New York, N.Y. 10028

National Council of State Garden Clubs
4401 Magnolia Avenue
St. Louis, Mo. 63110

National Wildlife Federation
1412 16th Street, NW
Washington, D.C. 20036

Nature Conservancy
1800 North Kent Street, Suite 800
Arlington, Va. 22209

Soil Conservation Society of America
7515 Northeast Ankeny Road
Ankeny, Iowa 50021

The Wilderness Society
729 15th Street, NW
Washington, D.C. 20005

VT-809

Small ponds or marshy areas may be included in outdoor classroom planning, and with student help many water-tolerant plants can be added. Cattails grow well in many places and may attract a muskrat family. In selecting a school site consider preserving pond, stream, and marsh areas for students to use in water ecosystem studies.

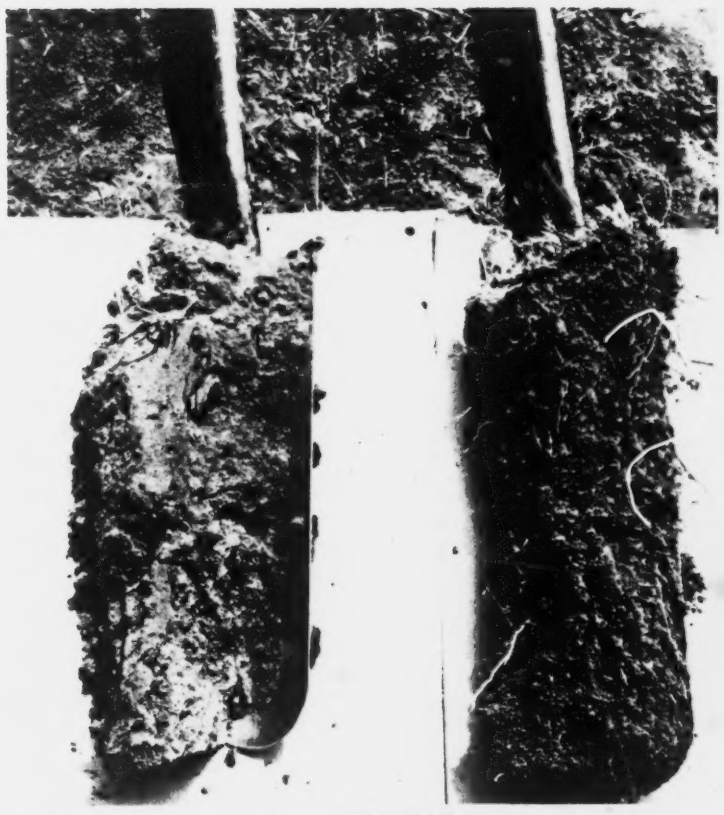
A school site inventory for conservation studies

NY-1,031

On this site the remnants of an old stone fence marking the boundary of a former farm field can lead students to historical investigation of cultural and economic changes in the neighborhood. For another viewpoint on old stone walls, students might read Robert Frost's "Mending Wall."

BN-37,935

Old tree stumps on school sites offer opportunities for tree-ring investigation and studies of decomposers that gradually break down the wood fiber of the stump.



OKLA-11-140

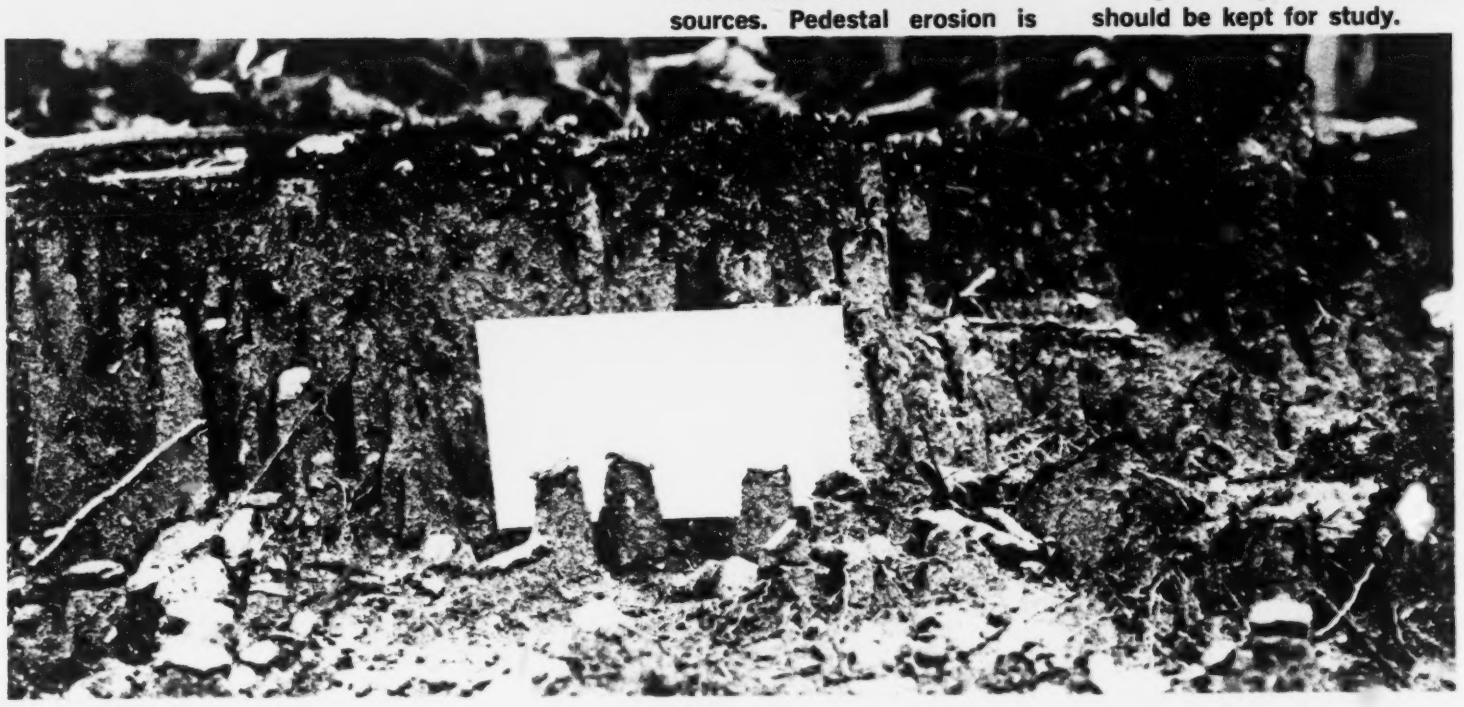
Different soils on the school site should be marked during inventory for further study. Here are contrasting examples of changes brought about by use of soil in farming. One sample shows loss of structure and low organic matter; the other shows soil that has been used properly and has good structure and organic matter.

NEB-2,085

Lichen on rocks offer an opportunity to study the first stages of soil building. Rock particles can be formed in many ways, but until organic matter is mixed with the rock material, no true soil is formed.

MASS-162

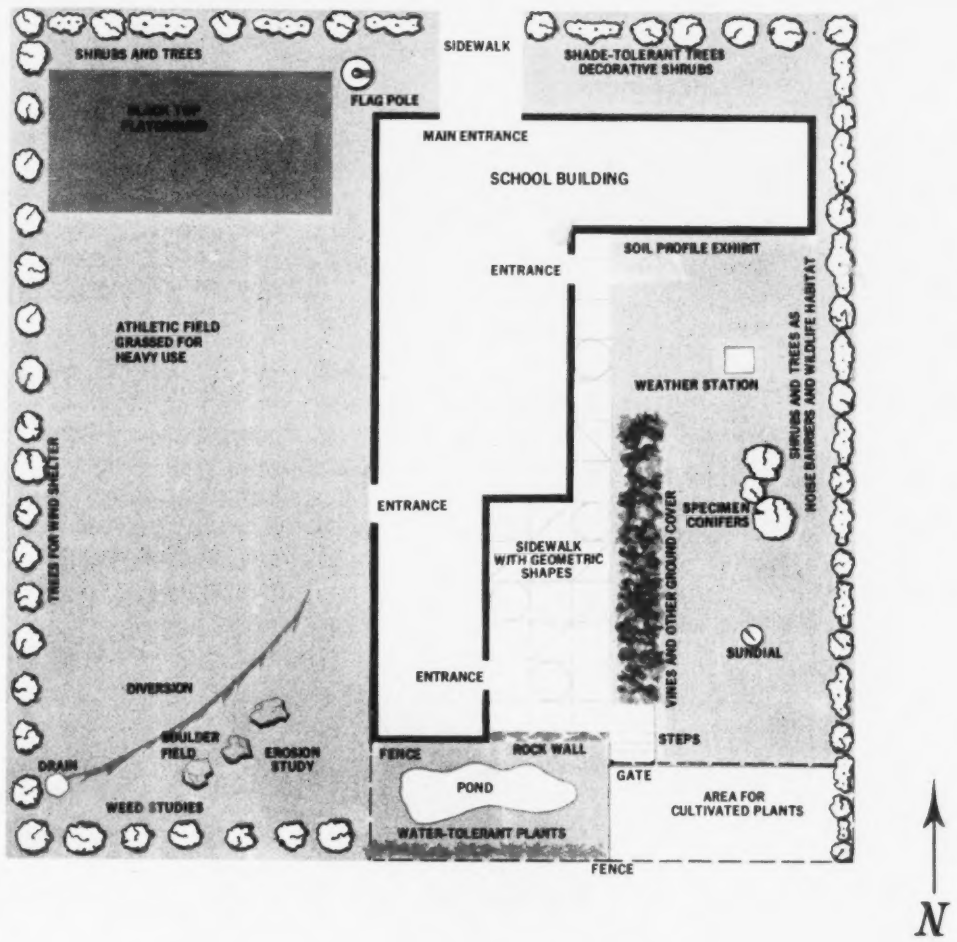
Impact of raindrops on unprotected soil marks the beginning of soil washing that can lead to sediment pollution of rivers and other water resources. Pedestal erosion is a dramatic illustration of raindrop impact and movement of soil particles by water. Any area on a school site that has examples of pedestal erosion should be kept for study.

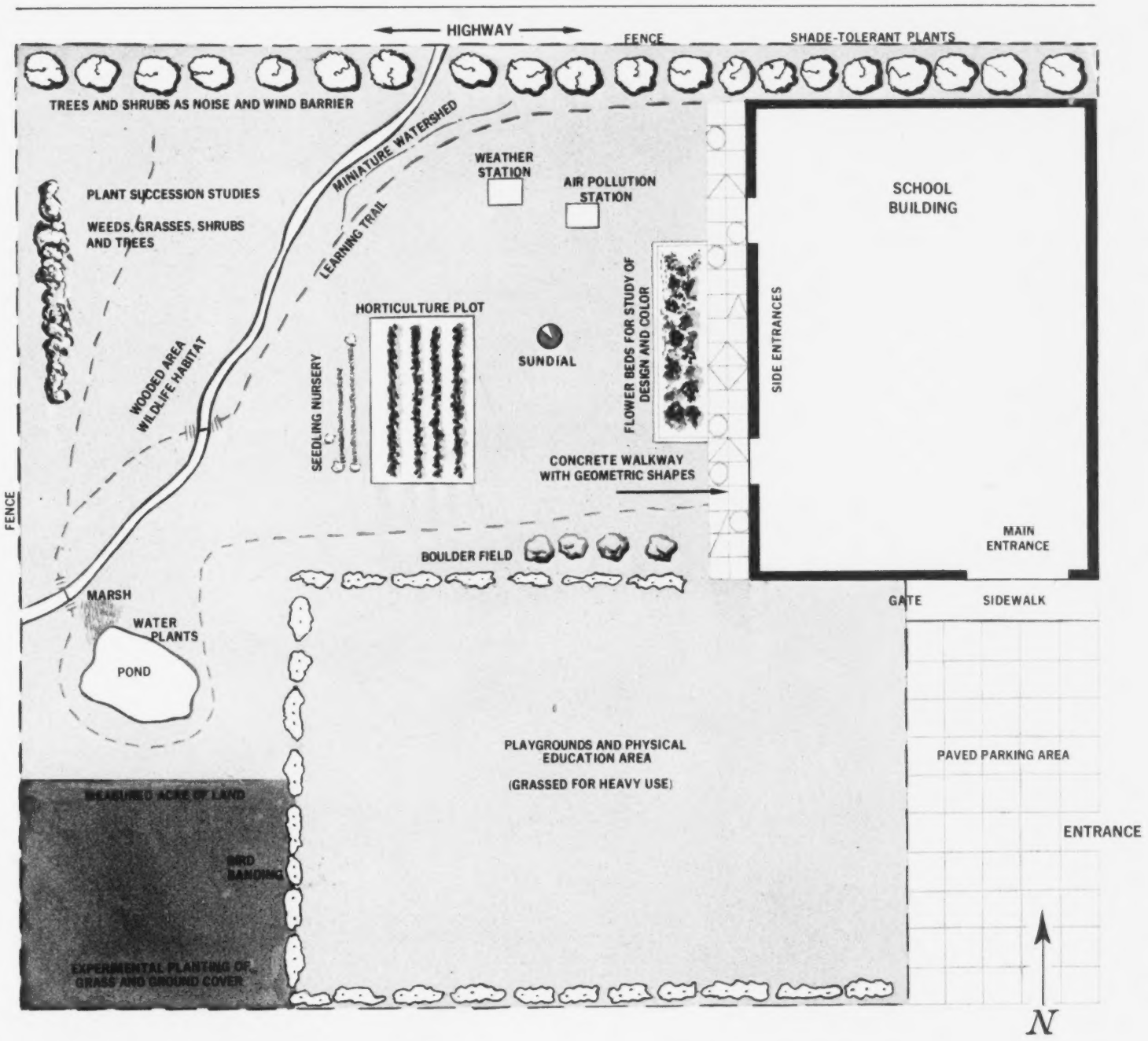


BN-37,932

Good planning begins with a look at the available resources and the possibilities for developing learning opportunities. Resource specialists contribute information on soils and plant materials and identify erosion, drainage, and water runoff problems. Teachers and students add their suggestions for making use of the outdoor classroom.

Good planning for bette. learning





Left, outdoor classroom for elementary school on a city school site, approximately 500 feet by 500 feet. Above, outdoor classroom for suburban or centralized community school, approximately 16 acres. Pond and water areas are surrounded by chain-link fence built according to local ordinances. Water studies can be made around pool and along creek.

NMEX-13,867

Trails around ponds for outdoor study require conservation treatment to prevent soil washing, to prepare the banks for future planting, and to improve wildlife habitat.

Conservation practices and problem solving

OH-60,945

Learning trails or walkways on steep slopes need treatment to prevent erosion and gullying from too much traffic. Steps made of small logs, old railroad ties, or other large timber protect the slope, and wood chips in a thick layer between the steps help stop soil washing. Ground-cover planting on the banks will protect the soil and hold it in place.

BN-37,933

Children plant appropriate grass seed mixtures to stabilize soil on a school site hillside and at the same time learn how grass and other plants protect soil. These children had previously shaped, limed, and fertilized the slope according to Soil Conservation Service specifications.

WVA-940

High school students use a net to hold straw mulch on a school site recently seeded to grasses.

TENN-1,066

Research by students helps them choose trees best suited to the climate and geographic location of their school. Planting projects begin with an understanding of the soil, root structure, and proper care of the seedling as it grows. Small school sites may limit choice of trees and shrubs to one of a kind for greater variety.

Imagination and ingenuity add variety

MICH-61, 113

Sundial made from a length of old pipe and a half-circle of concrete helps children understand movement of the sun and change of seasons. Observations on the time of day can be marked off with chalk, string, or water-soluble paint.

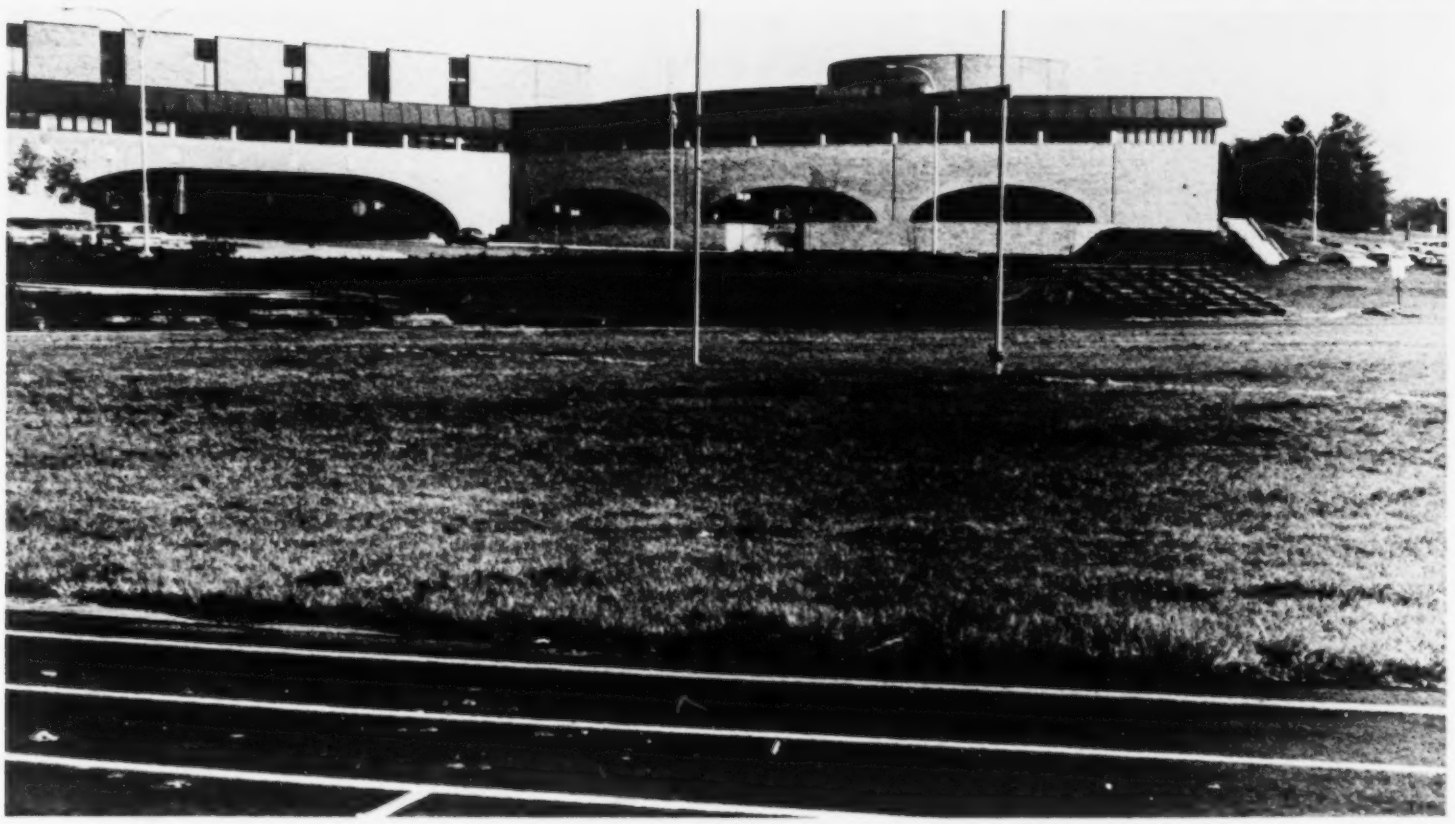
MICH-61, 107

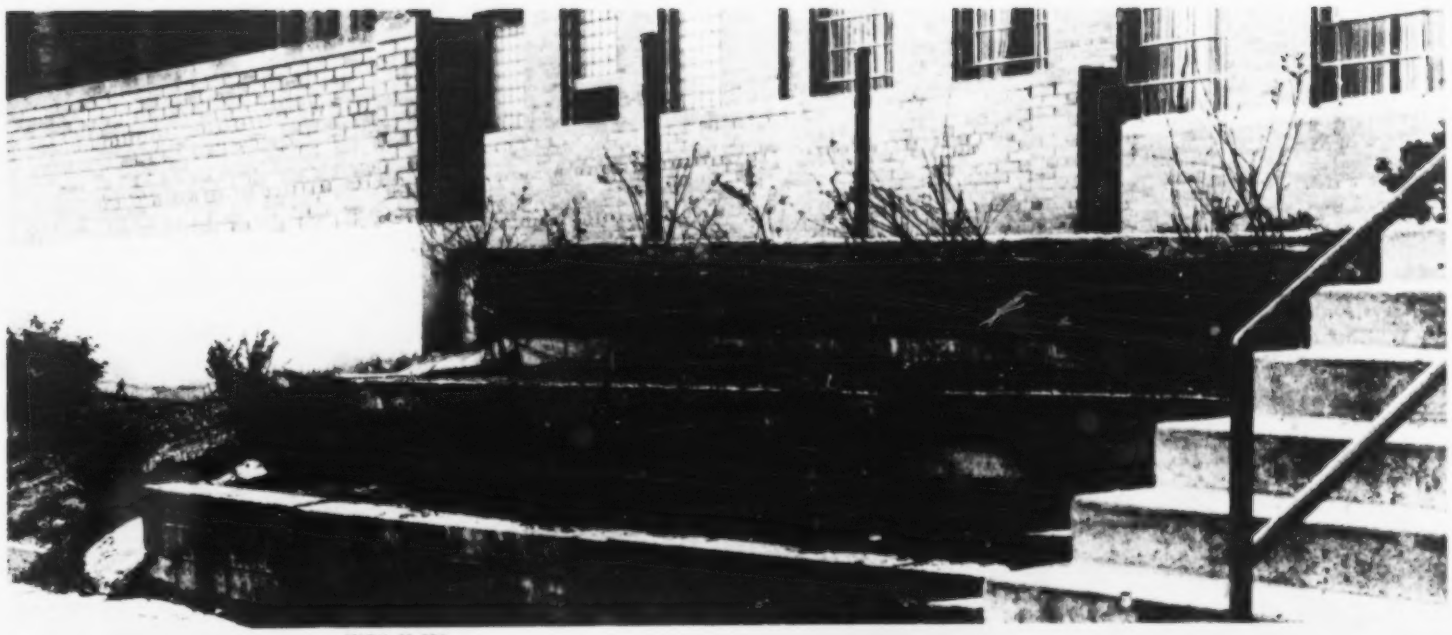
Plenty of room for an outdoor classroom here. Almost every school has at least one small corner that can be used for conservation studies and projects—the L-wing of buildings, interior courtyards, an expanse of lawn, or a strip of land beyond the football field or playground.

ILL-2,142
An indoor project in litter analysis. Students sometimes begin with litter prevention as their first step in conservation awareness. A sense of personal responsibility underlies all environmental concern; value judgments grow from personal experiences as students carry on their own programs to learn more about environmental quality and resource management.

TENN-1,077
Litter removal becomes a mathematical problem as students sort, weigh, and estimate the cost of cleaning up the total litter accumulation from roads bordering the school grounds. Other students from this 7th grade class gathered information on litter problems along county roads, man-hours spent on such work, and cost to taxpayers.

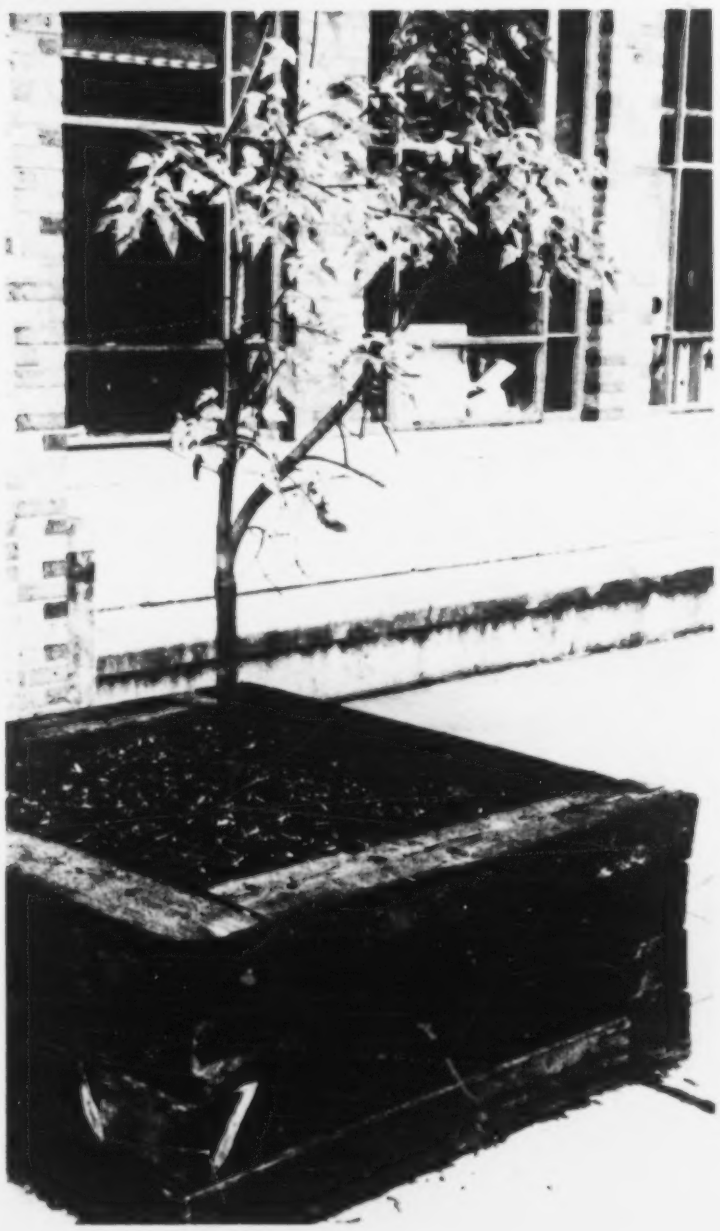
MICH-61,110
A lesson in how technical planning and construction can transform an unsightly mess into a community asset. This high school football field was once a small trash-filled ravine.





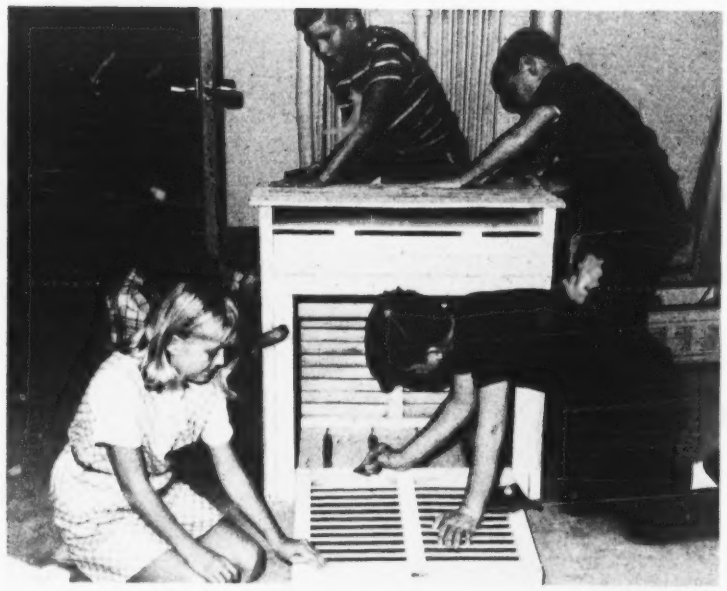
MICH-61,104

Terraces made of old railroad ties on the slope of a center-city school hold soil in place for planting many kinds of grasses, shrubs, and ground cover. Terracing has been used throughout the world for hundreds of years to keep soil in place and prevent erosion on steep slopes where crops are grown for food.



MICH-61,105

One tree in a planter represents a forest to students of a center-city junior high school as they measure growth and observe the leaf colors in autumn and the many kinds of insects on its leaves and bark. Wood chips in the planter help hold moisture and prevent rainstorms from disturbing the soil surface.



WYO-10, 179

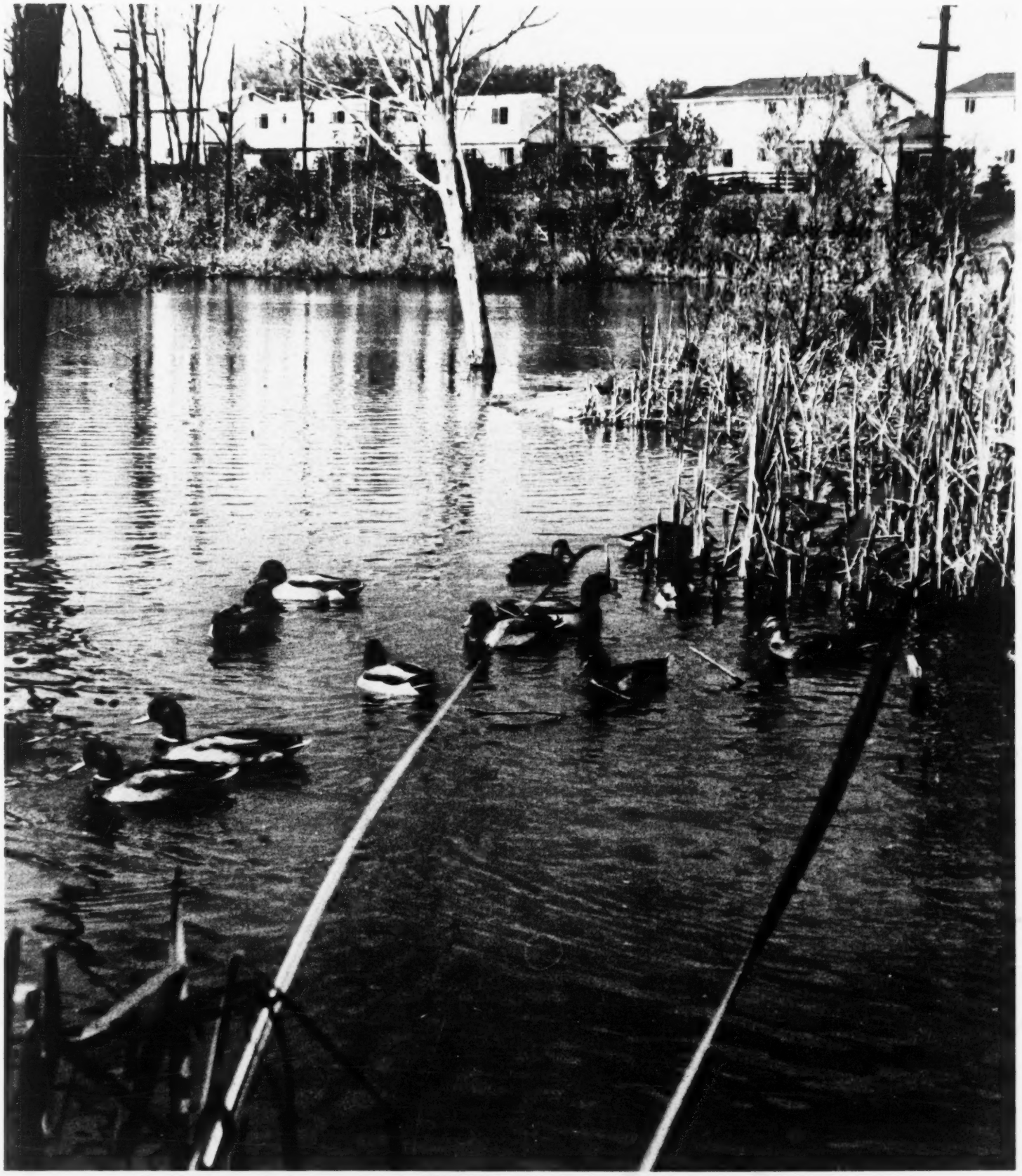
Shop and vocational classes make use of skills in building a protective shelter for weather instruments to be placed in their outdoor classroom.

MICH-61, 111

Boulders that are usually removed from school sites during construction should be left — either in their original locations or grouped at a more convenient spot — for studies in earth science. By comparing rock material in the boulders with parent material in the soil, students can identify kinds of soil developed from similar rocks.

MICH-61, 106

An open courtyard at this junior high school in a large midwestern city is now an outdoor learning area, complete with a pond, a family of ducks, and a variety of trees and shrubs.



MICH-61,109

Teachers and interested citizens saved this pond and marsh in a suburban community from being drained and filled. It is now a study area for several nearby schools. Students carry on daily observations of water and woodland ecosystems and wildlife, and find inspiration for creative work in art and language arts. The pond area also attracts many adults from the community who find it a continuing source of enjoyment.

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